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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/605,198 | 09/15/2003 | Sheng Wu | 11422-US-PA | 2197 |
| 31561 | 7590 | 07/22/2004 | EXAMINER | |
| JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN | | | | WEISS, HOWARD |
| | | ART UNIT | | PAPER NUMBER |
| | | 2814 | | |
| DATE MAILED: 07/22/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

| | | |
|-----------------|--------------|------------------|
| Application No. | 10/605,198 | Applicant(s) |
| Examiner | Howard Weiss | Art Unit 2814 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 14 May 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 September 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

Attorney's Docket Number: 11422-US-PA

Filing Date: 9/15/03

Continuing Data: none

Claimed Foreign Priority Date: 7/10/03 (TWX)

Applicant(s): Wu et al. (Huang)

Examiner: Howard Weiss

Election/Restrictions

1. Applicant's election without traverse of the Group I invention, Claims 1 to 10, in the reply filed on 5/11/04 is acknowledged. Claims 11 to 20 are canceled.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Taiwan on 7/10/03. It is noted, however, that applicant has not filed a certified copy of the Taiwanese application as required by 35 U.S.C. 119(b).

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

4. Claims 7 to 10 are objected to because of the following informalities:
 - a. In Line 1 of Claim 7, "Cell" should be changed to ---device---;
 - b. In Line 1 of Claims 8 to 10, "method" should be changed to ---memory device---.Appropriate correction is required.
5. Claim 3 recites the limitation "the erase gate" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to which “gate dielectric layer” the claim is referring.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 to 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin (U.S. Patent No. 6,476,440) and Manley (U.S. Patent No. 5,284,784).

Shin shows most aspects of the instant invention (e.g. Figures 1 and 3) including:

- first and second split gate flash memory cells each cell consisting of :
 - a substrate 11

- o a selective gate structure comprising a gate dielectric layer **32**, a selective gate **33a** and a cap layer **34a**
- o a spacer **36a** disposed on the select gate structure sidewall
- o an interlayer dielectric layer **13** with openings and having a different etch selectivity than the spacer and the cap layer
- o a tunnel dielectric layer **12**, a floating gate **15**, a gate dielectric layer **16** made of ONO (Column 4 Lines 14 and 15) and a control gate**17** filling said opening
- o an erase gate **20** disposed on said interlayer dielectric layer and said floating gate
- o source and drain regions **41a,b**

Shin does not show a device isolation structure defining an active area. Manley teaches (e.g. Figure 3) to form device isolation structures **10** to allow smaller chip size (Column 2 Line 14). It would have been obvious to a person of ordinary skill in the art at the time of invention to form device isolation structures as taught by Manley in the device of Shin to allow smaller chip size.

Conclusion

10. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.

11.9Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 872-9306**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.

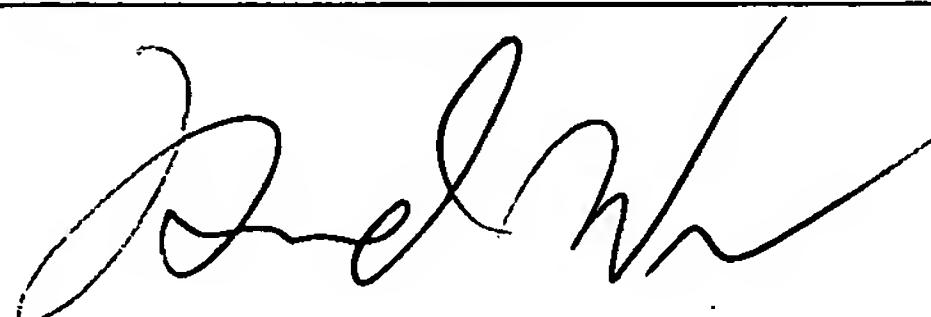
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group 2800 Receptionist at **(703) 308-0956**.

13. The following list is the Examiner's field of search for the present Office Action:

| Field of Search | Date |
|---|---------|
| U.S. Class / Subclass(es): 257/ 320 | 7/19/04 |
| Other Documentation: PLUS Analysis Report | 7/12/04 |
| Electronic Database(s): EAST, IEL | 7/19/04 |

HW/hw
19 July 2004



Howard Weiss
Patent Examiner
Art Unit 2814